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DOUGLAS-FIR TUSSOCK MOTH[1] MONITORING IN SOUTHERN IDAHO IN 1984 AND 1985

by

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ABSTRACT

Population evaluations indicate Douglas-fir tussock moth populations have declined and no defoliation is anticipated in the near future. Early detection surveys will be continued to monitor population fluctuations.

INTRODUCTION

Douglas-fir tussock moth populations can rapidly increase and seriously defoliate host trees: Douglas-fir, grand fir, and subalpine fir. Because serious defoliation can occur in 1 to 2 years, survey methods have been developed to monitor populations quickly and accurately (Daterman et al. 1979, Mason 1979), thus giving land managers needed time to consider management alternatives. Early detection surveys for adult moths are accomplished using pheromone-baited sticky traps. The number of moths recovered from the traps provides a relative estimate of current and anticipated tussock moth populations and, thus, the potential for tree defoliation. Should populations attain outbreak levels, aerial detection surveys are used to delineate defoliation. These methods have been routinely used in southern Idaho since 1981 in areas historically harboring tussock moth populations.

Since surveys in 1983 indicated that tussock moth populations were increasing in areas of southwestern Idaho (Thier and Mocettini 1984), a larval survey was conducted in 1984 followed by an early detection survey in both 1984 and 1985.

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In this evaluation I document the results of the 1984 and 1985 surveys. Results were released earlier via memoranda and in Tunnock et at. (1985) but, for continuity, are being presented in this Douglas-fir tussock moth survey series.

METHODS

Larval Survey

In the spring of 1984 I employed Mason's (1979) lower crown sequential sampling techniques to survey and categorize larval tussock moth populations at 16 locations. These areas had averaged over 25 adult moths per trap during the 1983 early detection survey.

Early Detection Survey

During late summer and fall of 1984 and 1985, I conducted a tussock moth early detection survey employing pheromone-baited sticky traps at 17 and 27 locations respectively, on the Boise, Payette, Salmon, and Sawtooth National Forests, adjacent State of Idaho lands, and Bureau of Land Management administered lands. I chose locations where tussock moth has been recovered during previous early detection surveys (Ollieu 1978, Thier and Mocettini 1984) or areas suggested by land managers. Using the procedures outlined by Daterman et al. (1979), pheromone-baited sticky traps, obtained from the USDA Forest Service Methods Application Group, were placed at each location between August 6 and 15, 1984 and August 19 and September 5, 1985, and retrieved between October 15 and November 8, 1984 and October 21 and November 1, 1985. Captured moths were identified and the average number of moths per trap computed. Data were then interpreted according to Daterman et al. (1979).

RESULTS AND DISCUSSION

Larval Survey

Larval Douglas-fir tussock moth populations on the Boise, Payette, Salmon, and Sawtooth National Forests and Idaho Department of Lands plots were all classified as low in 1984. This low-level classification indicates there is no chance of an outbreak for at least two years (Mason 1979). Table 1 identifies the larval survey sites visited in 1984. Plot locations are documented by Thier and Mocettini (1984).

An average of 25 or more Douglas-fir tussock moths per trap at a site during the early detection survey indicates that a population may cause visible defoliation within the next two summers (Daterman et al. 1979). This 25 moth threshold has been used as an indicator to begin larval surveys. Since all these sites exceeded 25 moths per trap in the 1983 early detection survey but revealed low larval populations in 1984, the 25 moth threshold is probably not a good larval sampling indicator.

Early Detection Survey

I recovered adult moths at 78% of the 1984 and 76% of the 1985 survey sites (Table 2). Average numbers of moths caught per trap have declined dramatically since 1983. Moth catches at none of the sites sampled in 1984 and 1985 approximated the average 25 moth threshold.

Table 1. Douglas-fir tussock moth larval survey locations, 1984

Boise National Forest
Bear Creek
Skunk Creek

Payette National Forest
Adams Creek
Barinaga Corral
Bear Saddle
E. Fork Brownlee Creek
Fourbit Creek
Little Weiser
McDowell Trail
Olive Creek
Stacy Creek

Salmon National Forest
Colson Creek
Lick Creek

Sawtooth National Forest
Little Water Gulch
Virginia Gulch

Idaho Department of Lands
Sharps Canyon

Table 2. Summary of male Douglas-fir tussock moths caught in pheromone-baited sticky traps distributed in southern Idaho - 1980 - 1985

Plot	Location Twp.	Rge.	Sec.	Mean Number of Male Douglas-fir Tussock Moths/Trap by Year 1980	1981	1982	1983	1984	1985
Boise N. F.									
Anderson Creek Divide	14N	2E	14	N.S.[1]	1.2	0	11.0	N.S.	N.S.
Bear Creek	4N	10E	7	N.S.	N.S.	0	32.8	0.4	0
Skunk Creek	12N	4E	14	N.S.	0.2	0.6	29.0	0	1.0
Yellow Pine Creek	3N	10E	35	N.S.	N.S.	0	10.6	0.4	N.S.
Payette N. F.									
Adams Creek	14N	6W	23	N.S.	N.S.	53.6	39.6	7.8	4.0
Barinaga Corral	20N	2W	23	N.S.	N.S.	N.S.	44.2	0.4	2.8
Bear Saddle	15N	5W	31	N.S.	N.S.	15.2	44.0	1.0	0.2
Brown's Pond	18N	4E	3	N.S.	0	0.6	11.0	0.5	N.S.
E. Fork Brownlee Creek	16N	4W	3	N.S.	N.S.	61.2	50.6	2.6	3.4
Fourbit Creek	13N	2E	7	N.S.	N.S.	49.8	42.8	N.S.	4.8
Little Weiser	13N	1E	1	N.S.	N.S.	N.S.	25.6	N.S.	0.6
McDowell Trail	17N	2W	17	N.S.	N.S.	N.S.	35.8	5.0	6.8
Olive Creek	17N	2W	7	N.S.	N.S.	36.8	51.2	14.6	10.5
Seid Creek	16N	4W	21	N.S.	N.S.	N.S.	17.4	11.2	N.S.
Stacy Creek	14N	6W	14	N.S.	N.S.	N.S.	42.8	18.0	8.8
Salmon N. F.									
Arnett Creek	22N	20E	30	N.S.	N.S.	0	0.6	0	N.S.
Colson Creek	23N	16E	12	N.S.	N.S.	15.2	39.0	3.2	N.S.
Headwaters Timber Sale	20N	20E	9	N.S.	N.S.	N.S.	N.S.	0	N.S.
Lick Creek	26N	22E	32	N.S.	N.S.	7.6	38.4	0.6	N.S.
Porphyry Creek	20N	18E	34	N.S.	N.S.	0	4.6	0	N.S.
Sawtooth N. F.									
Couch Summit	2N	14E	9	N.S.	0.4	0	7.0	0	N.S.
Howell Canyon	12S	25E	31	N.S.	N.S.	N.S.	N.S.	0.2	N.S.
Little Water Gulch	3N	12E	7	N.S.	3.8	13.6	27.0	17.2	0
Virginia Gulch	3N	11E	9	N.S.	0.6	2.0	26.8	1.8	0
Warm Springs	4N	17E	14	N.S.	N.S	2.6	14.8	0.8	N.S.
Idaho State Lands									
Sharps Canyon	2N	19E	36	N.S.	19.4	16.2	41.2	1.3	5.2
B.L.M. Lands									
Dewey Peak	6S	4W	3	55.0	64.0	N.S.	N.S.	15.0	1.6
Mill Creek	8S	5W	12	0.6	47.6	N.S.	N.S.	6.6	0
New York Summit	4S	3W	32	N.S.	N.S.	N.S.	N.S.	0	N.S.
So. Fork Boulder Creek	8S	5W	24	N.S.	N.S.	N.S.	N.S.	0.7	0.2

[1] N.S. - not sampled

Recommendations

Since the 1985 early detection survey showed static to declining populations, a larval survey in not recommended; however, continuation of the early detection survey is important to monitor population fluctuations. Traps will again be deployed in 1986, but sites where moth catches have been consistently small will likely be eliminated.

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